

SAN FRANCISCO COMMON YELLOWTHROAT (*Geothlypis trichas sinuosa*)

Criteria Scores

Population Trend	Range Trend	Population Size	Range Size	Endemism	Population Concentration	Threats
15	5	7.5	10	10	0	10

Special Concern Priority

Formerly, *sinuosa* was a candidate (Category 2) for federal listing as threatened or endangered (USFWS 1989, 1991) and a Bird Species of Special Concern (CDFG 1991). Currently, listed as a DFG special concern species (ranked: G5T2S2, or "demonstrably secure" with "1000-3000 individuals or 2000-10000 acres of occupied habitat.")

Breeding Bird Survey Statistics for California

Data inadequate for trend assessment (Sauer et al. 2000), however there have been focused surveys estimating densities of local subpopulations.

General Range and Abundance

Some uncertainty surrounds the knowledge of breeding distribution. Grinnell (1901) first recognized this “endemic, partly migratory” race of the Common Yellowthroat, Marshall and Dedrick (1994) state that "its exact breeding area was never delimited," however, most sources describe *sinuosa* as being confined to San Francisco Bay region bound by Carquinez Strait to the east, the Pacific Ocean to the west, Tomales Bay to the north, and the Santa Clara-Santa Cruz county line to the south (Forester 1977, Hobson et al. 1986, Terrill 2000). Wing chord and tarsal measurements of birds at the Point Reyes Peninsula support this description of the northern and western limits of the range (Evens et al. 1997). Wing chord measurements of birds captured in Carquinez Strait and Suisun Bay did not differ significantly (Hobson et al. 1985), therefore the eastern boundary of the range needs further clarification (Hobson et al. 1985). Raby (1992) identified Grizzly Island (in Suisun Bay) as a zone of intergradation between *sinuosa* and *G.t. arizela*. Outside the breeding season, specimens identified as *sinuosa* have been collected well

beyond the breeding boundaries and according to Grinnell and Miller (1944) and AOU (1957) *sinuosa* winters south to San Diego and occurs casually north to Eureka.

Seasonal Status in California

The breeding population is confined primarily to San Francisco Bay and outer coast marshes from Marin to Santa Cruz counties, however the eastern (upstream) limit of distribution within San Francisco Bay is unclear. Specimens indicate some movement outside the breeding range, especially to the south. Post-breeding and winter distribution is not well understood, however it is assumed that the yellowthroats associated with *Salicornia* dominated salt marshes in the San Francisco Bay area are *sinuosa* (Foster 1977, Hobson 1985). This habitat shift from brackish and freshwater situations to more saline environments is not well documented and other races may be occurring in salt marshes (Terrill 2000). Evens et al. (1997) captured an unexpected preponderance of males in breeding habitat at Point Reyes and speculated that females and birds of the year move downstream in the post-breeding season to utilize saltmarsh and peripheral habitat. A breeding season study of freshwater habitat at Olema Marsh, Marin County found that sexes respond independently to changes in foraging conditions (Kelly and Wood 1996). This intersexual variation in behavior supports the hypothesis that a post-breeding habitat shift may involve some portion of the local population.

In summary, as far as is known, *sinuosa* is confined to California at all seasons with some apparent shift in the population, apparently southward and perhaps into salt marsh habitat, following breeding.

Historical Range and Abundance in California

Very little information available on this taxon in particular, however loss of habitat value and extent is well documented. Using Foster's classification of breeding habitat (brackish marsh, riparian woodland swamp, freshwater marsh) and comparing with historical and modern habitat values we can estimate the scale of habitat reduction and populations declines. The San Francisco Bay Goals

Project (1999) estimated an 84% decline in “riparian forest/willow grove habitat” since 1800, and an 78% decline in habitats “adjacent” to baylands over the same period. If, as assumed by many, a portion of the population shifts to saltmarsh edge after breeding, there has been a further reduction in wintering tidal marsh by 79%. Using the Goals Report acreage, overall yellowthroat habitat (exclusive of freshwater marsh) has been reduced from approximately 194,731 acres to 40,956 acres, an overall loss of 78.9%. Values for losses of freshwater marsh habitats, though not available, are obviously even greater and probably account for Foster’s (1977) dire estimation of a population decline of 85-95% due to habitat loss. As Shuford (1993) states: “Although it will never be possible to determine with numerical precision the extent of the decline of the Yellowthroat population of the San Francisco Bay Area, it is clear that this decline has been of major proportions.”

Recent Range and Abundance in California

Estimates of total numbers of breeding pairs have provided equivocal results. Foster (1977) estimated 166 pairs from the nine counties encompassing *sinuosa*’s range; these low numbers followed a severe drought period, an environmental variable that may have temporarily depressed the population. In a follow-up study 8 years later, Hobson et al. (1986) estimated 569 pair from the same area. In a study of 19 sites around the Bay, Nur et al. (1997) estimated 1.39 individuals/ha in marshes where yellowthroats were present, but found that birds were absent from about half of the total sites surveyed; thus, they derived an overall estimate of 0.7 individuals/ha. Using statistical models (DISTANCE) and coarse habitat values, Nur et al. extrapolated a total breeding population of between 5700 and 10,600 individuals, however this included the rather dense populations in Suisun Marsh where subspecific identity is uncertain (Hobson et al. 1986, Raby 1992, Marshall and Dedrick 1994, Terrill 2000). The vast disparity among population estimates of the San Francisco Bay area population indicates that further study is necessary.

Some of these estimates may overlook smaller subpopulations that occur outside San Francisco Bay proper or at the periphery of *sinuosa*’s distribution. Evens and Stallcup (1984-1993)

estimated an average density of 0.499 (se=0.1853) territorial males/ha in nine breeding seasons in a 17.5 ha brackish to fresh 'woody swamp' at Olema Marsh, Marin Co. A study on the outer coast at Point Reyes National Seashore following a large forest fire in October 1995, described mean densities of 1.12 pairs/ha in unburned habitat as compared with 0.72 pairs/ha in recently burned habitat. When those data were pooled, estimates were expressed as 5.48 territories/km of linear habitat or 1.04 (± 0.1863) territories/ha (Evens et al. 1997). At unburned study sites (used as control sites) in the same study, minimum density estimates were 1.86 territories/ha. That study estimated 239 pairs of yellowthroats breeding at Point Reyes and projected that the area would support about 300 pairs after the habitat recovered from the effects of fire.

Exclusive of Suisun marsh and associated habitats, where the racial identity of populations is unclear, and given the wide disparity among previous estimates, it may be prudent to use Hobson's estimate of 569 pair as a minimum for San Francisco Bay and Evens *et al's* estimate of 300 as a minimum for the Point Reyes population (including Bolinas Lagoon). Overall estimates for other coastal sites (outside SF Bay) are not available, however substantial subpopulations have bred at Lake Merced in San Francisco (14 pair); Pescadero Marsh, San Mateo (18-31 pair); Crystal Springs & Searsville Lake (36 pair); and Rodeo Lagoon & Tennessee Valley, Marin Co. (6) (numbers from Hobson et al. 1985). Summing those various direct counts (admittedly conducted in widely-disparate years) and overlooking scattered pairs at isolated habitats, the minimum size of the known population is about 1000 pairs. Statistical models may amplify those totals substantially, but higher values are highly speculative.

Ecological Requirements

The common name "Salt Marsh Yellowthroat" is misleading. Schussler (1918) argued that the taxon be known as "San Francisco Yellowthroat" because, as he asserted, "it is found much more commonly in the neighborhood of fresh water throughout most of this region . . . even in areas directly adjacent to the lower bay where salty flats largely predominate, it shows marked preference

for the reaches of non-saline streams." Nur et al. (1997) confirmed Schussler's characterization with the finding that yellowthroats utilized marshes with a high percent cover of tules or rushes (*Scirpus spp.*), peppergrass (*Lipidium*), and Common Cat-tail (*Typha*), yet low percent cover of pickleweed (*Salicornia*) and concluded that yellowthroats were most common where *Salicornia* is least prevalent. Foster (1985) divided the breeding habitat of *sinuosa* into three broad types: woody swamp, brackish marsh and freshwater marsh. Subsequent studies describe yellowthroats in the San Francisco Bay area as a whole occupying about 60% brackish marsh, 20% riparian woodland/swamp, 10% freshwater marsh, 5% in saltmarsh, and 5% in upland (Hobson et al. 1986, Shuford 1993, and Terrill 1997).

It is important to note that yellowthroat habitat occupies the borders between and around moist situations, and that a contiguity of wetland types enhances the value of the habitat. This said, yellowthroats are also adept at using small and relatively isolated patches of habitat where ground water is close to the surface; these patches include swales and seeps, however they may nest occasionally in drier environments (Hobson et al. 1986, Johnson 1904). In a study of breeding season of *sinuosa* in a freshwater marsh, Kelly and Wood (1996) found diurnal, intraseasonal and intersexual differences in foraging behavior that suggest the birds alter behavior in response to changing conditions.

Threats

Habitat loss, predation and brood parasitism, respectively, are the greatest threats. Given the well-documented loss of wetlands around San Francisco Bay since the mid-1800s (Nichols et al. 1986, Goals Report 1999), habitat alteration and fragmentation must have caused the most devastating decreases in abundance. Although the trend toward habitat degradation has lessened in recent times, the inexorable pressures of urbanization continue to compromise wetland habitat values. Some restoration efforts may offset these losses, however. Secondary threats may include temporary

habitat loss due to disturbance caused by flooding and drought, wild fire, marsh restoration, decreased water supply, changing salinity values, etc.

Management and Research Recommendations

Management practices that promote riparian buffers and the development of peripheral (transitional) vegetation around marshlands will undoubtedly benefit yellowthroats. Increased vegetative cover, especially of willow thickets adjacent to fresh and brackish marshes will provide additional habitat as well as reduce the impacts of nest parasitism and predation. Reduction of feral cat populations and other non-native nest predators will also have positive impacts.

More research is needed to determine the eastern limit of distribution of *sinuosa*. Field work in the Suisun Marshes that adds to the work done by Hobson et al. 1986 would be helpful in clarifying the relationship between *sinuosa* and the Suisun population. Determining the racial identity of the yellowthroats that frequent upper edge of saltmarshes around San Francisco Bay in winter would also help elucidate our understanding of *sinuosa*'s behavior.

Monitoring Needs

- Annual population estimates to develop a clearer understanding of factors contributing to interannual variation would elucidate the status of *sinuosa*. Annual censuses at the following sites that support relatively large populations would be valuable: Coyote Hills, Alameda Co.; Coyote Creek, Santa Clara Co.; Pescadero Marsh, San Mateo Co.; Lake Merced, San Francisco Co; Limantour Estero, Marin Co.; Petaluma Marsh, Sonoma Co.; and Napa marsh, Napa Co.
- Abundance estimates of subpopulations located in outer coast marshes from San Francisco south to Santa Cruz County would aid in deriving an overall population estimate.
- Monitor metapopulation dynamics in more isolated populations.
- Study of dispersal corridors.

- Collection of mensural data in the eastern portion of the taxon's range would help clarify the eastern boundary of *sinuosa*'s range. Of particular value would be measurements of wing chord of birds that breed immediately east of the Carquinez Strait in the Suisun system.
- Additional mensural data should be collected from the breeding population at Point Reyes (*see* Marshall and Dedrick 1994) and perhaps the coastal marshes of southern Sonoma County.
- Determining the racial identity of birds wintering in salt marshes downstream from breeding habitat would help inform population estimates.

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